ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

Phytochemical screening and antimicrobial activity of medicinal plant "*Bridelia retusa*" Lin. (leaves extract)

Rupali. B. Dhawale, N.N.Pawar
P.G. Dept. of Chemistry, S.S.V.P.'s. Dr. P.R. Ghogrey Science College, Dhule

Manuscript Info

Manuscript History:

Received: 19 November 2014
Final Accepted: 22 December 2014
Published Online: January 2015

Key words:

Phytochemical,antimicrobial activities , *Bridelia retusa.*

Corresponding Author

Rupali B. Dhawale

Abstract

The *Bridelia retusa* Linn (Euphorbiaceae) Leaves extracted in solvent n-hexane, diethyl ether,; chloroform, acetone and Ethanol. Ethanol extract showed maximum phytoconstituent and significance antimicrobial activity. Alcoholic extract showed presence of flavonoids, phenols, saponins Tannins, terpenoids and steroids. Bacterial strain used P. aeroginsa and E.coli. Fungal strain used Candida albican and Aspergillus niger. Chloromphenicol was used as standard. Diethyl ether not showed antifugal activity.

INTRODUCTION

Progress in medicinal plants research has undergone a phenomenal growth during last two decades. Worldwide trend towards the utilization of natural plant remedies has created an enormous need for information about the properties of medicinal plants as antitumor, anticancers, antianalgesics and intecticides.

Medicinal plants contain some organic compound which produce definite physiological action on the human body. Phytochemicals deal with organic substance present in plants. Chemical compound such as carbohydrates, proteins, lipids and compound like glycoside, alkaloids, flavonoids are used as food and medicines by various ways.[1,2]

The plant Bridelia retusa spreng syn; Bridelia airyshawii (Family:Euphorbiaceae) commonly known as asan, aghan, or khaja is small to moderate sized deciduous tree, spinous when young with the grey bark, found through out India up to altitude of 1000m except in very dry regions.[3] In pharmacological trials bark of Bridelia retusa exihibited antiviral, hypoglycemic and hypotensive properties.[4] According to Ayurveda plant is good for removal of urinary concertion, useful in lumbago and hemipiegia. The bark is used as liniment and gingelly oil in rheumatism. Plant promot antifertility activity.[5] Literature survey shows that there is no systematic work has been made on leaves of Bridelia retusa so it was therefore need to investigation of phytoconstituent and Antimicrobial activity

Materials and methods -

1) Collection of plant materials -

The leaves of Bridelia retusa was collected from hilly region of Tornmal Dist.Nandurbar, India. The plant was identified and authenticated by Dr. S. R. Kshirsagar Taxonomist, Department of Botany S.S.V.P.S. Science College, Dhule, India. The voucher specimens were deposited in the department.

2) Method -

The leaves of Bridelia retusa were collected in summer season and dried in shade until they broken easily by hand. Powdered to fine size by mechanical grinder (mixier) stored in bottle. About 100 gm powder materials was extracted in soxhlet extracter successively in n-hexane, diethyl ether, chloroform, acetone and ethanol. The progress of extraction was evaluated by applying spot of extract on thin layer chromatography plates no appearance of spot on TLC plat by visualized in uv-chember followed by iodine chamber. The extract was filtered and concentrated by

rotary evaporator and finally dried at very low pressure. Dried extract was kept in refrigerator at 4^0 for their future use in phytochemical analysis.

Qulitative Phytochemical Screening -

The extract was tested for the presence of phytochemical by using following method [6, 7, 8]

Test for alkaloids-

Crude extract was mixed with 2ml of 1%HCl and heated gentlythen Mayer's and wagner's reagents were added to the mixture. Turbidity of the resulting precipitate was appered indicating presence of alkaloids.

Test for flavonoids-

1) Shinoda Test -

Crude extract was mixed with few fragments of mangnesium ribbon and concentrated HCl was added dropwise. Pink scarlet colour appeared after few minutes which indicated the presence of flavonoids.

2) Alkaline reagent test -

Crude extract was mixed with 2ml of 2% solution NaOH. An intense Yellow colour was formed which turned colourless on addition of few drops of diluted acid which indicated the presence of flavonoids.

Test for phenols and tannins -

Crude extract was mixed with 2ml of iodine solution of $FeCl_3$ A blue-green or black coloration indicated the presence of phenols and tannins.

Test for saponins -

Crude extract was mixed with 5ml of distilled water in a test tube and it was shaken vigorously. The formation of stable foam was taken as indication for the prensence of saponins.

Test for terpenoids

Crude extract was mixed with 2ml of chloroform and evaporated to dryness. to this 2ml of concentrated H_2SO_4 was added and heated for about 2minutes. A grayish colour indicated the presence of terpenoids.

Test for Glycosides

1) Liebermann's test

Crude extract was mixed with 2ml of chloroform and 2ml of acetic acid. The Mixture was then cooled in ice and carefully concentrated H_2SO_4 was added to it . A colour change from violet to blue to green indicated the presence of steroidal nucleus.

2) **Keller-kilani test -**

Crude extract was mixed with 2ml of glacial acetic acid containing 1-2 drops of 2% solution of $FeCl_3$ the mixture was then poured into another test tube containing 2ml of concentrated H_2SO_4 . A brown ring at the interphase indicated the presence of cardiac glycosides.

Observation Table -

Table No. 1

Sr. No.	Test	n-Hexane	Diethyl ether	Chloroform	Acetone	Ethanol
1.	Alkaloids	-	-	-	-	-
2.	Flavonoids	-	-	-	+	+
3.	Phenols	-	-	-	+	+
4.	Saponins	-	-	+	+	+
5.	Tannins	-	-	-	+	+
6.	Terpenoids	+	+	-	-	+
9.	Steriod	+	+	+	-	+

Positive test = +

Negative test = -

Table No. 2

Solvent used for extraction	Percentage of extracts(w/w)
n-hexane	9%
Di-ethyl ether	1.20%
Chloroform	4.0%
Acetone	3.5%
Ethanol	10.50%

Table No. 3
Antibacterial and Antifungal activity -

Microorganism	n-Hexane	Di-ethyl ether	Chloroform	Acetone	Ethanol
P. aeroginosa	9.8 mm	8.6 mm	10.4 mm	8.8 mm	14.00 mm
E. Coli	7.2 mm	9.7 mm	11.2 mm	7.9 mm	15.6 mm
Candida albican	8.7 mm	Nil	12.6 mm	12.0 mm	13.64 mm
Aspergillus niger	Nil	Nil	Nil	Nil	14.00 mm
Chloromphenicol	28.67 mm	24.44 mm	29.63 mm	26.30 mm	26.40 mm

Result and Discussion -

The result of phytochemical screening of Bridelia retusa showed the presence of various phytochemicals. Three solvent extract chloroform, acetone and Ethanol showed presence of saponins. Steriod is present in four solvent extract except acetone solvent extract. Flavonoids, phenol , saponin and Tannins are present in polor solvents. The most of phytoconstituent present in polor solvent ethanol. The terpenoids are present in non polor as well as polor solvents. The maximum phytoconstituent are present in ethanol extract. All secondary metabolites present in other medicinal plant are known to exhibit medicinal properties (Dosumu et al 2006 Srinivason et al 2007 Ptatima and sunder 2010)

The Results of 100 gm powder solute extracted percentage of extract shown in table 2. When powdered leaves extracted in diethyl ether the extraction time was found less as compared to other solvents and also the percentage of extract was found to be less that is1.2%. Extraction time was found to be maximum for ethanol and higher percentage of extract that is 10.50%. It indicating maximum phytochemicals dissolve in polar solvent.

The result of antibacterial and antifugal acvtivities of the various extract of leaf part of Bridelia Retusa are showed in table 3. The result showed that both non-polar solvents n-hexane and diethyl ether polar solvent Chloroform, acetone and ethanol extracts were active against bacteria.It was found that Diethyl ether extract not showed activity against fungi. Ethanol extract showed maximum activity against bacteria and fungi.

Conclusion -

The present finding showed that in ethanol extract contain maximum phytochemicals Flavonoids, phenol, saponins, tannins, terpenoids and steroids and having significance antibacterial and antifugal activity. Separation and characterization of phytochemicals from the extracts in progress.

References -

1) Arunkumar,S.Muthuselvem.2009 Analysis of phytochemical constituent and antibacterial activities of aloevera l. against clinical pathogens World J Agril. SC.5 (5):572-576.
2) Edogo, H.O. Okwu. D.E., Mbaebie, B.O 2005 phytochemical constituents of some Nigerian medicinal plants. Afr. J. Biotechno l.4 (7):685-688.
3) Anonymous. The Wealth of India.1988, 2(B) 295-97.
4) Kritikar KR, Basu BD, Indian Medicinal Plants, 1999, 3, 2212-14.
5) Chopra RN, Nayer SL. Glossary of Indian Medicinal plants, 1992, 162.
6) Sofowra, A. 1993. Medicinal plants and traditional Medicine In Africa. Spectrum Book Ltd. Indian Nigeria pp.191-289.
7) Trease G.E., Evans, W.C.1989, Pharmacognosy 11th edn. Bailliere Tindall London, pp. 45-50.
8) Horborne J.B.1973, phytochemical Methods Chapman and Hall Ltd. London pp 49-188.